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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,619	02/02/2004	Yoshinori Tsubaki	04072/HG	2307

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
767 THIRD AVENUE
25TH FLOOR
NEW YORK, NY 10017-2023

EXAMINER

SCHWARTZ, PAMELA R

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/770,619

Applicant(s)

TSUBAKI ET AL.

Examiner

Pamela R. Schwartz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 17-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-16, drawn to an ink jet recording medium, classified in class 428, subclass 32.1.
 - II. Claims 17-19, drawn to a method of making, classified in class 427, subclass 146.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group II and of Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a materially different process such as casting a layer including fine particle and binder containing hydrophilic polymer compound which has plural side chains on a main chain thereof and a polymerization degree of not less than 300 on a casting surface, irradiating to form crosslinking throughout, adhering the exposed surface to a support and removing the laminate from the casting surface.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Chick on April 13, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-16.

Affirmation of this election must be made by applicant in replying to this Office action.

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Claims 17-19 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

2. Claims 1-5, 8, 9, 11, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held et al. (5,537,137) in view of Liu et al. (US 2003/0099816).

The reference discloses an ink jet recording sheet comprising a support and a coating thereon (see col. 7, lines 1-8). The coating may contain a multivalent salt and a polyvinyl alcohol having photocrosslinkable groups (see col. 9, lines 4-38). The polymerization degree of the polyvinyl alcohol is 400 to 3000. The coating may also contain inorganic filler which may be silica (see col. 10, lines 1-16). Since the photosensitive groups of the reference may include those recited by applicants' specification, the limitation of claim 6 is inherently met by the reference. The support may be non-porous (see col. 7, lines 10-47). Typically, 0.5 to 10% photocrosslinkable groups are present (see col. 9, lines 33-37). The primary reference does not give particulars of the silica that may be used in the medium. Therefore, it is appropriate to look elsewhere for such teachings.

Liu et al. disclose an ink jet recording material containing silica. The silica may be made by a wet process, including the gelation method, or a dry process [0048-0049].

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The silica may have a BET specific surface area of 25 to 400 m²/g [0050]. The reference discloses pulverizing or dividing particles that are larger in size than desired due to agglomeration of primary particles [0057, 0061, 0062, 0064]. The reference discloses desired sizes of secondary particles of 10-300 nm and 5-30 nm for primary particles [0064-0066]. While the reference does not disclose a coefficient of variation in primary particle distribution, it discloses determining the particle size of the primary particles [0063] and the importance of maintaining primary particle size in specific ranges [0066]. Since it is known in the art to control particle size distribution in order to control the size and shape of pores formed between the particles, it would have been obvious to one of ordinary skill in the art, from the disclosure of the reference at [0066] to narrowly control particle size distribution in order to obtain desired and favorable ink absorption characteristics. It would have been obvious to one of ordinary skill in the art to select a silica from those disclosed for use in this art by the secondary reference since particulars for the silica of the primary reference were not disclosed and since the silica of the primary and secondary reference serve equivalent purposes in the recording layers of the references.

3. Claims 6, 7, 10, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held et al. (5,537,137) in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281). Held et al. is relied upon as set forth in paragraph 2 above. The Kobayashi et al. references each disclose gas-phase silica for inclusion in ink jet recording layers. They do not specifically disclose a ratio of isolated silanol groups but they teach the number of silanol groups/nm² (see col. 6, lines 27-52 of '281 or col. 8,

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lines 25-52 of '941). These references teach that silica with low surface silanol density results in a highly porous structure. Based upon these teachings, it would have been obvious to one of ordinary skill in the art to select a gas-phase silica with low surface silanol density as the silica of the primary reference in order to form a layer of high void volume. With respect to particles size, '941 specifically sets forth the primary particle size at col. 8, line 65 to col. 9, line 6. '281 teaches the size of the secondary particles at col. 6, lines 53-67. From this disclosure, it would have been obvious to one of ordinary skill in the art that the primary particles had to be very small, on the order of a few nanometers, and in a range overlapping with that instantly claimed.

4. Claims 1-5, 8, 9, 11, 12, 14 and 15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/886,433 in view of Liu et al. (US 2003/0099816). The copending application recites in its claims an ink jet recording sheet having a layer comprising a hydrophilic binder and an inorganic pigment that is gas-phase silica. The binder is recited as cross-linked with ionizing radiation. The claims of the application are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs. Claim 5 of the copending application recites that the support is non water-absorptive.

Liu et al. is relied upon as in paragraph 2 above for the particulars of the silica which have not been set forth by the claims of the copending application.

This is a provisional obviousness-type double patenting rejection.

5. Claims 6, 7, 10, 13 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/886,433 in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281).

The copending application recites in its claims an ink jet recording sheet having a layer comprising a hydrophilic binder and an inorganic pigment that is gas-phase silica. The binder is recited as cross-linked with ionizing radiation. The claims of the application are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs. Claim 5 of the copending application recites that the support is non water-absorptive.

The Kobayashi et al. references each disclose gas-phase silica for inclusion in ink jet recording layers. They do not specifically disclose a ratio of isolated silanol groups but they teach the number of silanol groups/nm² (see col. 6, lines 27-52 of '281 or col. 8, lines 25-52 of '941). These references teach that silica with low surface silanol density results in a highly porous structure. Based upon these teachings, it would have been obvious to one of ordinary skill in the art to select a gas-phase silica with low

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surface silanol density as the silica of the primary reference in order to form a layer of high void volume. With respect to particles size, '941 specifically sets forth the primary particle size at col. 8, line 65 to col. 9, line 6. '281 teaches the size of the secondary particles at col. 6, lines 53-67. From this disclosure, it would have been obvious to one of ordinary skill in the art that the primary particles had to be very small, on the order of a few nanometers, and in a range overlapping with that instantly claimed.

6. Claims 1-5, 8, 9, 11, 12, 14 and 15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Application Nos. 10/643,349; 10/833,842, 10/855,525 and 10/823340 each taken in view of Liu et al. (US 2003/0099816). The copending applications recite an ink jet recording sheet having a layer comprising a hydrophilic binder and inorganic microparticles. The binder is recited as cross-linked with ionizing radiation. The claims of the applications are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs.

With respect to 10/643,394, see claim 1 and the description of this embodiment at [0050-0052], 10/833,842, see claims 1-3, 10/855,525, see the claims and the description of the claimed embodiment at [0040,0049] and 10/823,340, see claims 1 and 2 and the description of the claimed embodiment at [0084]. It would have been obvious to one of ordinary skill in the art to determine the percentage of side chains on

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the hydrophilic polymer in order to control the degree of cross-linking that occurs at these sites. In each case a non-water absorptive support is either claimed or described in the specification concerning the claimed embodiment of the invention.

In each case, the particles are disclosed to be silica. Liu et al. is relied upon as in paragraph 2 above for the particulars of the silica which have not been set forth by the claims of the copending application.

This is a provisional obviousness-type double patenting rejection.

7. Claims 6, 7, 10, 13 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Application Nos. 10/643,349, 10/833,842, 10/855,525 and 10/823340 each taken in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281).

The copending applications recite an ink jet recording sheet having a layer comprising a hydrophilic binder and inorganic microparticles. The binder is recited as cross-linked with ionizing radiation. The claims of the applications are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs. With respect to 10/643,394, see claim 1 and the description of this embodiment at [0050-0052], 10/833,842, see claims 1-3, 10/855,525, see the claims and the description of the claimed embodiment at [0040,0049] and 10/823,340, see claims 1 and 2 and the description of the claimed embodiment at [0084].

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The Kobayashi et al. references each disclose gas-phase silica for inclusion in ink jet recording layers. They do not specifically disclose a ratio of isolated silanol groups but they teach the number of silanol groups/nm² (see col. 6, lines 27-52 of '281 or col. 8, lines 25-52 of '941). These references teach that silica with low surface silanol density results in a highly porous structure. Based upon these teachings, it would have been obvious to one of ordinary skill in the art to select a gas-phase silica with low surface silanol density as the silica of the primary reference in order to form a layer of high void volume. With respect to particles size, '941 specifically sets forth the primary particle size at col. 8, line 65 to col. 9, line 6. '281 teaches the size of the secondary particles at col. 6, lines 53-67. From this disclosure, it would have been obvious to one of ordinary skill in the art that the primary particles had to be very small, on the order of a few nanometers, and in a range overlapping with that instantly claimed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela Schwartz whose telephone number is (571) 272-1528.

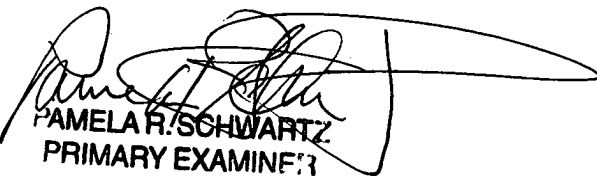
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PRSchwartz
April 15, 2005



PAMELA R. SCHWARTZ
PRIMARY EXAMINER